Claims PTO
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1. A data storing device comprising:

a housing including first and second opposed portions;

an integrated circuit coupled to the first portion of the housing, the integrated circuit including a random access memory;

a battery supported by the first portion of the housing and having first and second terminals, the first terminal being coupled to the integrated circuit; and

connection circuitry coupling the second terminal of the battery to the integrated circuit to complete a circuit, the connection circuitry including a conductor supported by the second portion of the housing and movable with the second portion of the housing.

2. A data storing device in accordance with claim 1 wherein the battery is a thin film battery.

3. A data storing device according to claim 1, wherein the conductor completes a circuit and supplies electrical power

to the memory when the first and second portions of the housing are sealed together and does not complete the circuit or supply electrical power to the memory when the first and second portions are not sealed together.

4. A data storing device according to claim 1, wherein the conductor completes a circuit and supplies electrical power to the memory when the first and second portions of the housing are coupled together and does not complete the circuit or supply electrical power to the memory when the first and second portions are not coupled together.

5. A data storing device according to claim 1, wherein the first and second portions of the housing hermetically seal the integrated circuit and the battery.

6. A data storing device according to claim 1, wherein the first and second portions of the housing hermetically seal the integrated circuit and the battery when the first and second portions of the housing are mated together, and wherein the conductor completes a circuit and supplies electrical power to the memory when the first and second portions of the housing are mated together and does not complete the circuit or supply electrical power to the memory when the first and second portions are not mated together.

7. A data storing device comprising:

a housing defined by first and second housing portions, the second housing portion being movable relative to the first housing portion between mated and open positions;

an integrated circuit supported by the first housing portion;

a battery in the housing; and

a conductor supported by and movable with the second housing portion, the conductor coupling the battery to the integrated circuit when the second housing portion is in the mated position.

8. A data storing device in accordance with claim 7 wherein the integrated circuit comprises a static random access memory.

9. A data storing device in accordance with claim 7 wherein the integrated circuit includes a memory and a microprocessor, and wherein the conductor couples the battery to the integrated circuit.

10. A data storing device in accordance with claim 7 wherein the integrated circuit includes a memory and a microprocessor, wherein the memory is a static random access memory, and wherein the conductor couples the battery to the integrated circuit so that the integrated circuit is powered by the battery, thereby resulting in the static random access memory being powered by the battery.

11. A data storing device in accordance with claim 7 wherein the battery comprises a thin film battery.

12. A data storing device in accordance with claim 7 wherein the housing has a thickness of about 0.03 inches.

13. A data storing device in accordance with claim 7 wherein the integrated circuit includes a memory, an RF transmitter, and a microprocessor, wherein the memory is a static random access memory, and wherein the conductor couples the battery to the integrated circuit so that the integrated circuit is powered by the battery, thereby resulting in the static random access memory being powered by the battery.

14. A data storing device in accordance with claim 7 wherein the integrated circuit includes a memory, a microwave transmitter, a microwave receiver, and a microprocessor, wherein the memory is a static random access memory, and wherein the conductor couples the battery to the integrated circuit so that the integrated circuit is powered by the battery, thereby resulting in the static random access memory being powered by the battery.

15. A data storing device in accordance with claim 7 and further comprising conductive epoxy coupling the battery to the integrated circuit.

16. A data storing device according to claim 7, wherein the first and second housing portions enclose and hermetically seal the integrated circuit and the battery when the first and second housing portions are in the mated position.

17. A data storing device according to claim 7, wherein the conductor does not supply electrical power to the integrated circuit when the first and second housing portions are not in the mated position.

18. A data storing device according to claim 7, wherein the conductor completes a circuit and supplies electrical power to the integrated circuit when the first and second portions of the housing are sealed together and does not complete the circuit or supply electrical power to the integrated circuit when the first and second portions are not sealed together.

19. A portable data storing device comprising:

a housing defined by first and second housing portions each including planar surfaces;

an integrated circuit including a static random access memory configured to store the data, the integrated circuit being supported from the first housing portion;

a thin film battery in the housing; and

a conductor supported by and movable with the second housing portion, the conductor coupling the battery to the integrated circuit so that the integrated circuit is powered by the battery when the first and second portions are mated and thereby resulting in the static random access memory being powered by the battery and so that the integrated circuit is not powered by the battery when the first and second portions are not mated.

20. The portable data storing device of claim 19, wherein the integrated circuit further comprises a microprocessor, a spread spectrum RF transmitter controlled by the microprocessor, an RF receiver controlled by the micropro-

cessor.

21. A portable data storing device in accordance with claim 19 wherein the housing has a thickness of about 0.03 inches.

22. A portable data storing device in accordance with claim 19 and further comprising conductive epoxy electrically coupling the battery to the integrated circuit.

23. A portable data storage device comprising:

a first housing member;

an antenna formed on the first housing member;

a second housing member configured to be mated to the first housing member;

a first battery disposed between the first and second housing members, a first electrode of the first battery contacting a first power conductor on the first housing member;

a second battery disposed between the first and second housing members, a first electrode of the second battery contacting a second power conductor on the first housing member;

an integrated circuit disposed on a side of the first housing member configured to be mated to the second housing member; and

a conductor formed on the second housing member, the conductor coupling the first and second batteries in series and supplying electrical power to the integrated circuit when the second housing member is mated to the first housing member and not coupling the first and second batteries in series or supplying electrical power to the integrated circuit when the second housing member is not mated to the first housing member.

24. The portable data storage device of claim 23, wherein the integrated circuit further comprises a microprocessor, a RF transmitter controlled by the microprocessor, an RF receiver controlled by the microprocessor and a static random access memory coupled to the microprocessor and configured to store the data, the RF transmitter and RF receiver being operatively coupled to the antenna.

25. A portable data storing device comprising:

a housing defined by first and second housing portions each including planar surfaces;

an integrated circuit including a random access memory configured to store the data, the integrated circuit being supported from the first housing portion;

a thin film battery in the housing; and

a conductor supported by and movable with the second housing portion, the conductor coupling the battery to the integrated circuit so that the integrated circuit is powered by the battery when the first and second portions are mated and thereby resulting in the memory being powered by the battery and so that the integrated circuit is not powered by the battery when the first and second portions are not mated.

26. A passive radio frequency identification device comprising:

a first flexible film having a peripheral portion;

a second flexible film having a peripheral portion, the peripheral portion of the second flexible film laminated directly to the peripheral portion of the first flexible film to form an approximately hermetically sealed flexible package;

a first dipole antenna disposed directly on the first film between the first and second films; and

a single integrated circuit disposed between the first and second films and having substantially all circuitry formed on a surface of the integrated circuit facing the first film, the integrated circuit being coupled to the first dipole antenna using a conductive epoxy and including memory to store an identification number, a receiver coupled to the first dipole antenna to receive and decode data from a spread spectrum signal in the range of approximately 200MHz to 10GHz, control logic to perform a comparison between the received data and at least a portion of the identification number, and a transmitter coupled to the first dipole antenna to transmit a response based on the comparison.

27. The radio frequency identification device of claim 26 further comprising an adhesive backing to affix the package to a surface.

28. The radio frequency identification device of claim 26, further comprising a second dipole antenna coupled to the integrated circuit and disposed between the first and second films, wherein the first and second dipole antennas are approximately perpendicular to each other in a generally X-shaped configuration.

29. The radio frequency identification device of claim 26, wherein the first dipole antenna comprises a printed conductive ink or epoxy.

30. The radio frequency identification device of claim 26, wherein only two terminals connect off-chip components to the integrated circuit.

31. The radio frequency identification device of claim 26, further comprising a printed label adhered to the first flexible film.

32. The radio frequency identification device of claim 26, wherein the package is bar coded.

33. An apparatus comprising:

a backing to which a plurality of radio frequency identification devices are removably attached by an adhesive, each of the radio frequency identification devices comprising:

a flexible package;

a first antenna enclosed in the package; and

an integrated circuit enclosed in the package and coupled to the first antenna.

34. The apparatus of claim 33, wherein the first antenna is a type of dipole antenna and the receiver is to receive and decode a spread spectrum signal in the range of 200MHz to 10GHz.

35. The apparatus of claim 34, wherein each of the radio frequency identification devices further comprises a second dipole antenna approximately perpendicular to the first antenna.

36. The apparatus of claim 33, wherein the first antenna is a type of loop antenna.

37. The apparatus of claim 33, wherein the first antenna comprises a printed conductive ink or epoxy.

38. The apparatus of claim 33, wherein the integrated circuit is coupled to the first antenna using a conductive epoxy.

39. The apparatus of claim 33, wherein only two terminals connect off-chip components to the integrated circuit.

40. The apparatus of claim 33, wherein the backing is in a roll, reel, tape, fan fold, or sheet format for controlled dispensing of the plurality of radio frequency identification devices.

41. The apparatus of claim 40, further comprising a dispenser to mechanically dispense the plurality of radio frequency identification devices through an opening.

42. The apparatus of claim 41, further comprising an RF shield to substantially prevent the plurality of radio frequency identification devices from receiving a signal.

43. The apparatus of claim 33, wherein the package includes a printable surface.

44. The apparatus of claim 43, wherein the printable surface is bar coded.

45. A method of forming a radio frequency identification device comprising:

forming a plurality of antennas on a first flexible film;

coupling each of a plurality of integrated circuits to each of the plurality of antennas;

laminating a second flexible film directly to the first flexible film, sealing each of the plurality of antennas and each of the plurality of integrated circuits between the first and second flexible films to form a web of radio frequency identification devices;

testing each of the radio frequency identification devices within the web of radio frequency identification devices in an individually shielded cavity formed by placing grounded plates on both sides of the web; and

separating each of the radio frequency identification devices of the web of radio frequency identification devices from each other subsequent to the testing.

46. The method of claim 45, further comprising removably attaching each of the radio frequency identification devices to a backing using an adhesive.

47. The method of claim 46, wherein the backing is in a roll, reel, tape, fan fold, or sheet format for controlled dispensing of the plurality of radio frequency identification devices.

48. The method of claim 47, further comprising radio frequency shielding the radio frequency identification devices.

49. The method of claim 45, wherein forming the plurality of antennas includes screen printing the plurality of antennas.

50. The method of claim 45, wherein coupling each of a plurality of integrated circuits to each of the plurality of antennas includes using a conductive epoxy.

51. The method of claim 45, further comprising applying an adhesive material to the first flexible film on a side opposite a side facing the second flexible film.

52. The method of claim 52, further comprising forming a printable label surface on the second flexible film on a side opposite a side facing the first flexible film.

53. The method of claim 45, further comprising forming a printable label surface on the second flexible film on a side opposite a side facing the first flexible film.

54. A method comprising:

loading a plurality of flexible radio frequency identification devices into a dispenser, the radio frequency identification devices removably attached to a backing; and

dispensing a flexible radio frequency identification device of the plurality of flexible radio frequency identification devices through an opening of the dispenser.

55. The method of claim 54, further comprising communicating with the radio frequency identification device using a spread spectrum signal in the range of 200MHz to 10GHz.

56. The method of claim 54, wherein the backing is in a roll, reel, tape, fan fold, or sheet format.

57. The method of claim 54, wherein the dispenser comprises a shield to substantially prevent the plurality of flexible radio frequency identification devices from receiving a signal.

58. The method of claim 54, further comprising printing information on the flexible radio frequency identification device.

59. The method of claim 58, wherein the information includes a bar code.

60. The method of claim 54, further comprising affixing the flexible radio frequency identification device to an article.

61. The method of claim 60, further comprising printing information on the flexible radio frequency identification device about the article

62. The method of claim 60, wherein the article is airport baggage.

63. The method of claim 54, further comprising testing the radio frequency identification device in an individually shielded cavity formed by placing grounded plates on both sides of the radio frequency identification device.